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Web-Based Visual Analytics for Social Media Data

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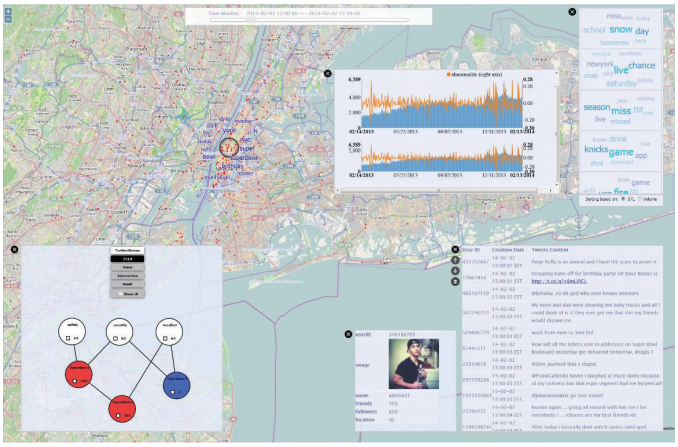
Social media data provides valuable information about different events, trends, and happenings around the world. Visual analytics tasks for social media data have strong computational power and large storage space requirements. Due to these requirements, subdivision of data analysis tools into several layers (such as data, business logic or algorithms, and presentation) is often necessary to make those accessible for various clients. In our whole framework, on the server side, data analysis algorithms are performed and then output is published in the form of Web services. Visual interfaces then are provided in the form of thin clients that call these Web services for data querying, exploration, and analysis tasks. In our work, we implemented a Web-based visual analytics tool for social media data analysis. Initially, we extended our existing desktop-based Twitter data analysis application named "ScatterBlogs" to create a Web services-based API that provides access to all the data analysis algorithms. In the second phase, we created a Web-based visual interface consuming these Web services. In the next phase, we provide several features, such as a classifier tool and Web scraping of related websites for enhancement of existing functionalities. The features support our social media analysis and improve situational awareness. Some major components of the visual interfaces include a map view, content lens, abnormal event detection view, Tweets summary view, and a filtering/visual query module. The tool can then be used by parties from various fields of interest, requiring only a browser to perform social media data analysis tasks.

Graduate mentor Junghoon Chae writes, "Jun contributed to the implementation and design of major components in our system. He developed multiple analytical components: a classifier view to monitor and detect tweets containing specific words and a CNN and Google trend analysis view for comparative analysis to Twitter feed. His work will be crucial to our future work."



Graphical user interface of the Web ScatterBlogs, which is mainly based on OpenStreetMap, comprising features like time monitor (top center), charts (middle right), tabulation of popular words (top right), classifier tool (bottom left), and Tweet details (bottom right).

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